Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) An intravascular probe comprising:

a sheath having a distal portion and a proximal portion;

a first optical waveguide extending along the sheath, the first optical waveguide being configured to carry optical radiation between the distal and proximal portions;

an optical bench disposed at the distal portion, in which a distal end of the first optical waveguide is seated;

a first beam redirector disposed ~~at the distal portion~~ on the optical bench in optical communication with the first optical waveguide;

an optical detector configured to receive optical radiation from the first optical waveguide;

an ultrasound transducer disposed at the distal portion and coupled to the optical bench, the ultrasound transducer being configured to couple ultrasound energy between the intravascular probe and a transmission medium; and

a wire extending along the sheath in electrical communication with the ultrasound transducer.

2. (Currently Amended) The intravascular probe of claim 1, further comprising:

a second optical waveguide extending along the sheath, the second optical waveguide being configured to carry optical radiation between the distal and proximal portions, and having a distal end seated in the optical bench;

a second beam redirector disposed ~~at the distal portion~~ on the optical bench in optical communication with the second optical waveguide.

3. (Original) The intravascular probe of claim 2, wherein the second beam redirector is configured to redirect an axially directed beam of optical radiation incident thereon from the second optical waveguide into a beam propagating along a direction having a radial component.

4. (Original) The intravascular probe of claim 2, further comprising an optical source configured to couple optical radiation into the second optical waveguide.

5. (Currently Amended) An intravascular probe comprising:

a sheath having a distal portion and a proximal portion;

a first optical waveguide extending along the sheath, the first optical waveguide being configured to carry optical radiation between the distal and proximal portions;

an optical bench disposed at the distal portion, in which a distal end of the first optical waveguide is seated;

a first beam redirector disposed ~~at the distal portion~~ on the optical bench in optical communication with the first optical waveguide;

a second optical waveguide extending along the sheath, the second optical waveguide being configured to carry optical radiation between the distal and proximal portions, and having a distal end seated in the optical bench;

a second beam redirector disposed ~~at the distal portion~~ on the optical bench in optical communication with the second optical waveguide;

an ultrasound transducer disposed at the distal portion and coupled to the optical bench, the ultrasound transducer being configured to couple ultrasound energy between the intravascular probe and a transmission medium; and

a wire extending along the sheath in electrical communication with the ultrasound transducer.

6. (Original) The intravascular probe of claim 5, wherein the first beam redirector is configured to redirect an axially directed beam of optical radiation incident thereon from the first optical waveguide into a beam propagating along a direction having a radial component.

7. (Original) The intravascular probe of claim 5, further comprising an optical detector configured to receive optical radiation from the first optical waveguide.

8. (Original) The intravascular probe of claim 5, further comprising an optical source configured to couple optical radiation into the first optical waveguide.

9. (Original) The intravascular probe of claim 8, wherein the optical source is configured to emit infrared radiation.

10. (Original) The intravascular probe of claim 5, wherein the first optical waveguide comprises an optical fiber.

11. (Original) The intravascular probe of claim 5, wherein the first beam redirector comprises an optical reflector.

12. (Original) The intravascular probe of claim 5, wherein the first beam redirector comprises a prism.

13. (Original) The intravascular probe of claim 5, wherein the first beam redirector comprises a bend in a distal tip of the first optical waveguide.

14. (Original) The intravascular probe of claim 5, wherein the ultrasound transducer comprises a piezoelectric transducer.

15. (Original) The intravascular probe of claim 5, wherein the sheath comprises a material that is transparent to infrared radiation.

16. (Original) The intravascular probe of claim 5, wherein the first beam redirector is rigidly connected to the ultrasound transducer.

17. (Original) The intravascular probe of claim 5, wherein the first beam redirector is flexibly connected to the ultrasound transducer.

18. (Original) The intravascular probe of claim 5, wherein the first beam redirector is configured to emit light from a first axial location with respect to a longitudinal axis of the sheath, and the ultrasound transducer is configured to emit ultrasound energy from the first axial location.

19. (Original) The intravascular probe of claim 5, wherein the first beam redirector is configured to emit light from a first axial location with respect to a longitudinal axis of the sheath, and the ultrasound transducer is configured to emit ultrasound energy from a second axial location different from the first axial location.

20. (Currently Amended) The intravascular probe of claim 5, further comprising a rotatable cable surrounding the first optical waveguide and the wire, the rotatable cable being configured to coaxially rotate the first beam redirector and the ultrasound transducer.

21. (Original) The intravascular probe of claim 5, further comprising:

a plurality of beam redirectors circumferentially disposed about a longitudinal axis of the sheath;

a plurality of optical waveguides in optical communication with the plurality of beam redirectors; and

a plurality of ultrasound transducers circumferentially disposed about the longitudinal axis.

22. (New) The intravascular probe of claim 1, further comprising a rotatable cable surrounding the first optical waveguide and the wire, the rotatable cable being configured to coaxially rotate the first beam redirector and the ultrasound transducer.

23. (New) The intravascular probe of claim 22, wherein the optical bench is disposed beyond a distal end of the cable.

24. (New) The intravascular probe of claim 20, wherein the optical bench is disposed beyond a distal end of the cable.

25. (New) The intravascular probe of claim 1, wherein the ultrasound transducer is rigidly coupled to the optical bench.

26. (New) The intravascular probe of claim 1, wherein the ultrasound transducer is flexibly coupled to the optical bench.

27. (New) The intravascular probe of claim 5, wherein the ultrasound transducer is rigidly coupled to the optical bench.

28. (New) The intravascular probe of claim 5, wherein the ultrasound transducer is flexibly coupled to the optical bench.